



PRIMAR 2020 ANNUAL REPORT

PRIMAR is a multi-lateral and government based organization. As a regional ENC coordinating center (RENC), it's primary role is to ensure a harmonized quality level of official electronic navigational charts (ENCs) from many producer nations (i.e. national hydrographic offices) and making this information available through a network of distributors to international shipping on a 24/7 basis.



OPERATION OF PRIMAR

The Norwegian Mapping Authority, Hydrographic Service (NHS) operates PRIMAR on a non-profit cost recovery basis. The NHS uses a Norwegian state owned company, Electronic Chart Centre AS (ECC), to deliver services within database operations/validation, sales and distribution, infrastructure and R&D to PRIMAR through a service provider agreement. NHS is responsible for the daily operation within the framework of strategies and policies decided by the PRIMAR Advisory Committee. The Cooperating Hydrographic Offices, through the PRIMAR Advisory Committee (PAC) decides on the overarching policy of PRIMAR. PRIMAR's vision, mission and objectives are as follows:

PRIMAR's Vision:

In order to enhance safety at sea and protect the maritime environment, PRIMAR's vision is to be the most efficient model for the provision of ENC services and maritime geospatial data worldwide.

PRIMAR'S MISSION

- Assume RENC responsibilities in support of UN Resolutions, IMO Conventions and IHO WEND Principles.
- Provide all actors with responsibilities for safety of navigation and protection of the maritime environment with accurate up to date maritime geospatial data.
- Provide to HOs service solutions and framework to co-operate in the management and provision of ENCs and maritime geospatial data.
- Consider Capacity Building support to achieve adequate global ENC coverage.

PRIMAR'S OBJECTIVES

- Foster closer cooperation between HOs to reach the greatest level of harmonization and consistency in ENC services.
- Encourage and support the achievement of adequate global ENC coverage.
- Encourage and support efforts to establish RENCs.
- To provide the most efficient ENC quality and distribution services and ensure continuous improvement.
- Foster close cooperation with private industry and distribution network to ensure the most efficient services.
- To ensure the visibility of PRIMAR and the promotion of IHO global ENC coverage.
- Provide cooperating hydrographic offices with operational and technical support and services in their work to produce, quality control and deliver harmonized ENC services compliant with all relevant international standards.

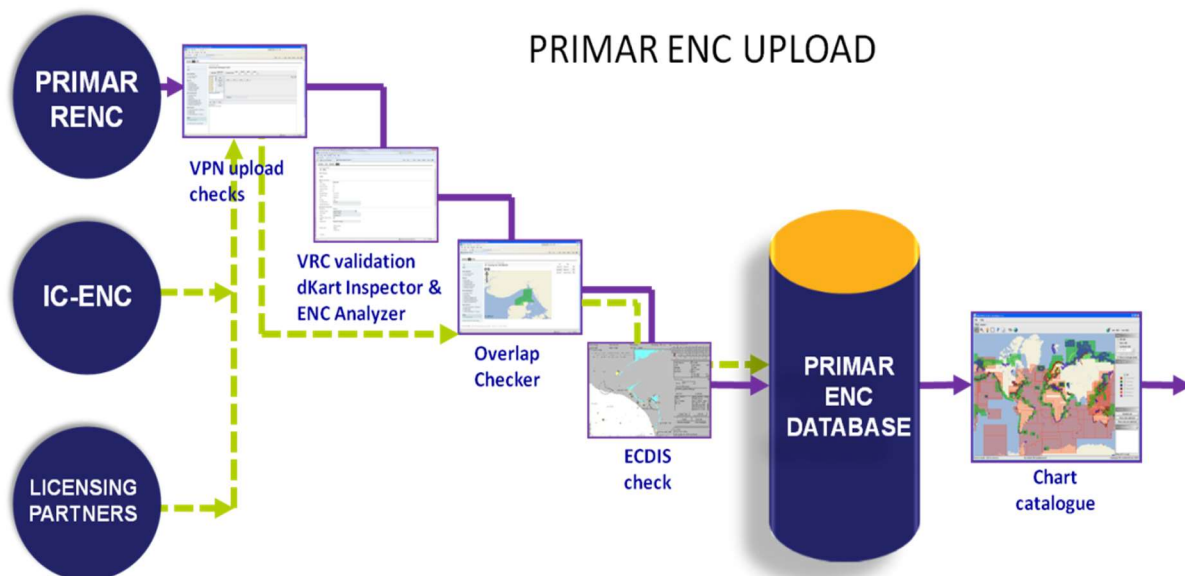
PRIMAR FOCUS AREAS FOR 2020

The specific objectives for PRIMAR during 2020 have been:

- Continuously provide the world's most efficient ENC quality control and validation services
- Prepare for new members to join PRIMAR
- To increase knowledge and conduct training in ENC validation and quality control for member nations
- To conduct S-100 training / Capacity Building
- To increase ENC sales, maintain cost control and financial sustainability
- To further develop and improve the PRIMAR technology and services
- To be visible in the IHO arena and maintain a close relation with the network of distributors

PRIMAR 2020 ENC QUALITY CONTROL AND VALIDATION SERVICES

All ENCs delivered to PRIMAR undergo a series of validation and quality control checks. To ensure that the ENCs are in accordance with relevant IHO standards, all ENCs go through automated S-58 upload checks in the PRIMAR VPN system. ENCs that contains errors are rejected, and a report is generated back to the relevant HO. Having been ISO 9001 accredited since 2005, PRIMAR has a high degree of focus on quality in all stages of the ENC validation and distribution process.



PRIMAR ENC Validation Procedure

The main tool used for ENC quality control available for PRIMAR member nations is the **validation report checker (VRC)**. The VRC gives access to a whole range of different tools for checking the quality and consistency of the ENC product. All messages reported in the VRC are categorized with guidance on how to proceed with the validation of the ENCs. Historical data from the validation process of each ENC is stored and easily accessible in the VRC. In addition, PRIMAR provides support to the HOs in interpreting, understanding and suggest appropriate measures to resolve quality issues.



The PRIMAR ENC validation statistics for 2020 are as follows:

New ENC	New Editions	Reissue	Cancel cell	Updates
1 429	5 347	712	405	25 252

The below table shows the development of the PRIMAR ENC database during 2020:

Date	Total no of ENCs	Overview	General	Coastal	Approach	Harbor	Berthing	Updates
01.01.20	15 693	179	637	2 573	4 914	5 860	1 530	44 546
01.07.20	16 448	179	645	2 607	5 113	6 071	1 833	45 062
31.12.20	17 119	180	654	2 641	5 292	6 413	1 939	48 929

In 2017, PAC 24 approved to introduce KPIs for ENC validation within PRIMAR. The following validation completion times were achieved in 2020:

Type of data	Validation KPI (95%)	2020 Average Achieved
ENC Update	1 day	8 hrs.
ENC New Edition	2 days	5 hrs.
New ENC	3 days	9 hrs.

STRATEGIC ISSUES

The PRIMAR Strategic and Financial Working Groups met online in May 2020. Discussions were held on the PRIMAR future strategy related to distribution of S-100 products and nautical publications.

The 27th PRIMAR Advisory Committee (PAC) Meeting was arranged online in November 2020. PAC 27 tasked PRIMAR to further investigate new development projects like distribution of nautical information and publications.

The PRIMAR ENC database now contains more than 17 000 ENCs worldwide.

PRIMAR has set up several free-of-charge service deliveries to support the work of IHO:



- Global WMS coverage for internal use at IHO
- ENC catalogue (RENC / Non RENC coverage)
- CATZOC delivery from both RENCs
- Supply of Overlap/Consistency Checker to all Regional Hydrographic Commissions.

ENC SALES, COST CONTROL AND FINANCIAL SUSTAINABILITY

PRIMAR 2020 financial result:

- Total revenue of ENC sales 20% increase compared with 2019
- Financial surplus (excess of cost coverage after regular royalty payments) of approximately \$900k.

PAC 27 approved the 2021 budget and allocated funds for several development projects within PRIMAR.

S-100 TRAINING / CAPACITY BUILDING

In order to assist hydrographic offices and other organizations to better understand and adopt to the coming S-100 standard, the PRIMAR service provider ECC has developed a set of training modules that covers S-100/S-101. The modules are laid out as follows:

Module 1: S-100 Overview:

History, Objectives, Content, Benefits and Maintenance.

Module 2: IHO Registry:

Structure, Content, Registers and Testbeds.

Module 3: S-101 General Overview:

Content, Features, Attributes, Relationships, Geometry, DCEG and Encoding.

Module 4: S-101 Data Quality:

CATZOC and Quality of Bathymetric Data, Horizontal/vertical uncertainty and Visualization.

Module 5: S-101 Conversion and Challenges:

Features, Attributes, Enumeration, Geometry and Topology.

Module 6: S-100 Part 15 Data Protection:

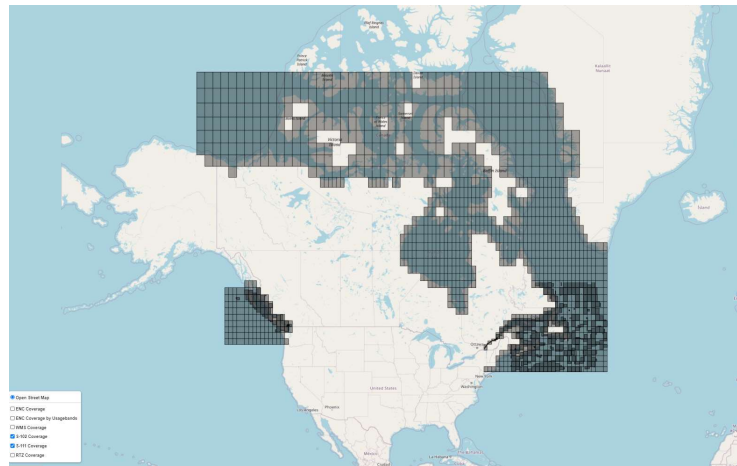
Encryption, Signing, Certificates and Public/Private key.

The complete set of modules can be completed as online training sessions over 4 days – 3 hours each day. During 2020, this course package has been given to 51 participants from 21 different countries (Hydrographic offices) and 5 different organizations.

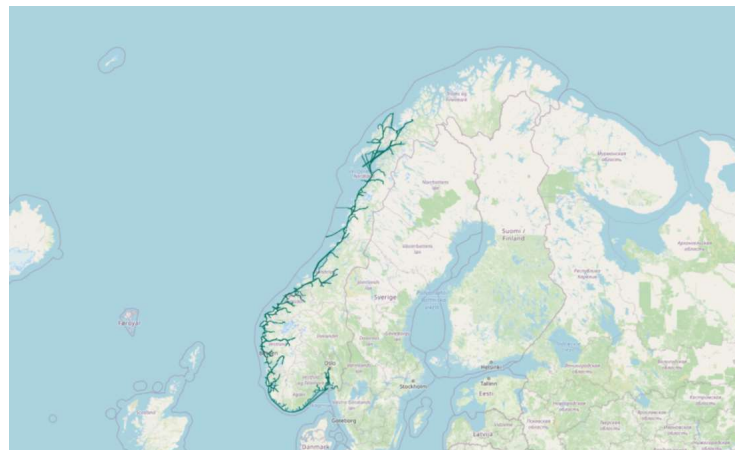
DEVELOPMENT OF PRIMAR TECHNOLOGY AND SERVICES

During 2020, the following technological developments have been conducted or are ongoing within PRIMAR:

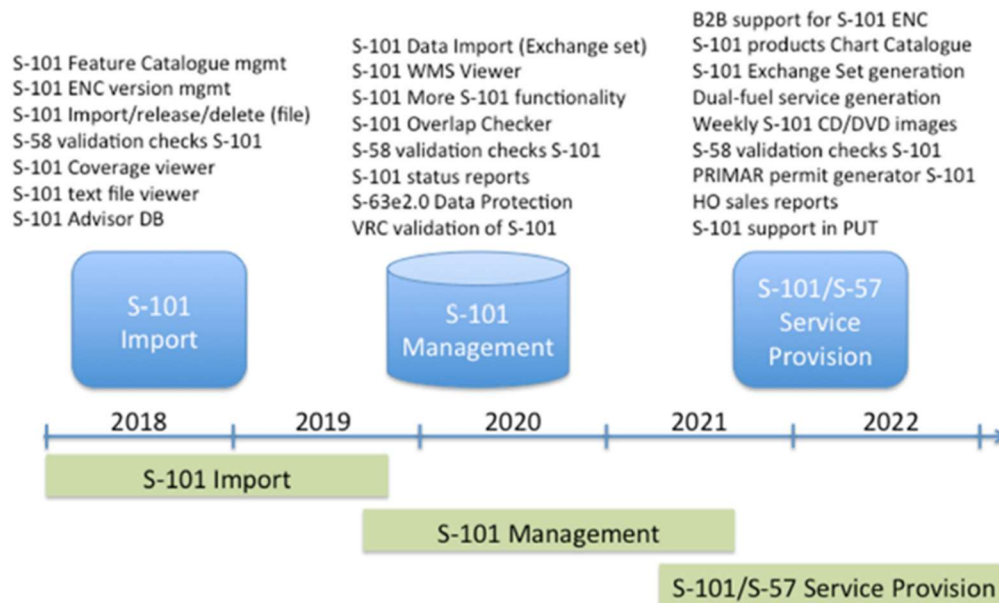
- After a development project and a test phase in cooperation with Teledyne Caris and the Canadian Hydrographic Service (CHS), the PRIMAR S-100 Service was launched in July 2020. Currently, the S-100 Service contains more than 2500 S-102/S-111 datasets from CHS. These datasets are available for sale through the PRIMAR distributor network. The data is protected by the S-100 ed.15 encryption standard.



- The PRIMAR service has been expanded with functionality to enable easy purchasing and distribution of recommended sailing routes via the Route plan exchange format (RTZ). RTZ can be purchased and delivered completely independently of other products, or it can be selected and purchased based on the end users existing ENC portfolio, allowing the vessel to get routes for the specific areas in which they sail. The service also provides automatic updates to licensed routes, distributed to the end users via the PRIMAR service. The RTZ format is supported in most ECDIS / ECS systems. The RTZ format allows for many uses, including route plan on board, route plan exchange between systems on the bridge and ship to shore communication, etc.



- PAC 27 approved funding of the PRIMAR S-101 project throughout 2021 and 2022. The S-101 development is a 5-year project. It will allow for operation of a dual-fuel S-57 / S-101 distribution system in the transition period between S-57 and S-101. The following figure outlines the development stages towards an operational dual fuel service from 2023.



THE IHO ARENA AND RELATIONSHIP WITH THE DISTRIBUTOR NETWORK

Due to the global pandemic, 2020 proved to be a different year with regards to travel and physical meetings. All IHO meetings, working groups and seminars were conducted as online events. PRIMAR took part in several online events during 2020 to promote the RENC concept, contribute to working groups and maintain contact with the network of distributors.

The bi-annual PRIMAR distributor seminar was conducted as an online webinar in 2020.

CONCLUSION AND FOCUS FOR 2021

2020 proved to be a successful year for PRIMAR with further increase in ENC sales, increase in the number of registered ENC users, expanded coverage in the RENC ENC database, launch of new services, and several technological developments underway. The financial situation in PRIMAR is good.

At the end of 2020, PRIMAR have 17 member nations through bilateral agreements. 12 other nations and official ENC producers deliver data to PRIMAR through distribution agreements. All ENCs from IC-ENC are delivered to PRIMAR through a VAR agreement. Together, this comprise the global PRIMAR ENC database of more than 17 000 ENCs.



At the end of 2020, PRIMAR have 55 commercial ENC distributors around the world. In addition, PRIMAR operate 10 different Navy Supplier Services as well as 10 different Governmental ENC Supplier Services.

Development of new PRIMAR technology and services will continue in 2021.

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